भारतीय मानक
Indian Standard

IS 2485 : 2022

सामान्य इंजीनिरिंग प्रयोजनार्थ तार रस्सियों हेतु ड्रॉप फोर्ज्ड सॉकेट — विशिष्टि

(दूसरा पुनरीक्षण)

Drop Forged Sockets for Wire Ropes for General Engineering Purposes — Specification

(Second Revision)

ICS 77.140.65

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April 2022 **Price Group 4**

Wire Ropes and Wire Products Sectional Committee, MED 10

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Wire Ropes and Wire Products Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard was first published in 1963 and revised in 1979. This standard is being revised again to keep pace with the latest technological developments and international practices. In this revision, the following major changes have been made:

a) A reference clause has been added mentioning the latest version of all the referred standards;
b) All the previous amendments have been incorporated in this revised standard; and
c) Tables for dimensions of open and closed type sockets have been updated.

The composition of the Committee responsible for the preparation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DROP FORGED SOCKETS FOR WIRE ROPES FOR GENERAL ENGINEERING PURPOSES — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers the requirements of drop forged sockets for general engineering purposes, of the open or closed type, for wire ropes of nominal sizes 8 to 40 mm and 8 to 32 mm respectively.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. In case the standards are to be referred in this clause they are to be listed as follows:

IS No.	*Title*
1570 (Part 2/Sec 1) : 1979	Schedules for wrought steels: Part 2 Carbon steels (unalloyed steels), Section 1 Wrought products (other than wires) with specified chemical composition and related properties (*first revision*)
209 : 1992	Zinc ingot — Specification (*fourth revision*)
2633 : 1986	Method for testing uniformity of coating on zinc coated articles (*second revision*)
549 : 2005	Split pins — Specification (*third revision*)

3 NOMINAL SIZE

The nominal size of the socket, whether open or closed, shall be the diameter of the wire rope for which the socket is suitable, as given in Tables 1 and 2.

4 TYPES

a) Open type socket (*see* Table 1); and

b) Closed type socket (*see* Table 2).

5 DIMENSIONS

Shall be in accordance with Tables 1 and 2.

5.1 Tolerance

The tolerance given in Table 3 shall apply to all forged dimensions in Tables 1 and 2. The following tolerances shall apply to machined dimensions *E* and *K*:

Dimension *E*: $^{+0.75}_{-0.00}$ mm

Dimension *K*: $^{+0.00}_{-0.15}$ mm

5.2 The holes in the lugs shall have a tolerance of + 0.5 mm for sockets of nominal size up to and including 24 mm, and + 1.0 mm for sockets of nominal size above 24 mm.

6 MATERIAL

The bodies of sockets shall be made from C20 steel of IS 1570 (Part 2/Sec 1), and the pins shall be made from C25Mn75 steel of IS 1570 (Part 2/Sec 1).

6.1 When so specified by the purchaser, the bodies and pins shall be made from C25Mn75 steel of IS 1570 (Part 2/Sec 1).

7 DESIGNATION

The designation of the sockets shall include the following:

a) Type-open (O) or closed (C),

b) Anti-corrosive coating-galvanized (G) or not galvanized (NG),

c) Nominal diameter in mm of the rope for which it is suitable, and

d) Number of this standard.

Example:

A socket of the open type, galvanized with a hot-dip process and suitable for a wire rope of 28 mm diameter shall be designated as :

Socket OG28 IS 2485

8 GENERAL REQUIREMENTS

8.1 Workmanship

8.1.1 *Open and Closed Sockets*

The sockets shall be drop forged neatly and cleanly made and finished. All flashes or fins produced in manufacture shall be dressed to a level surface. The taper of the interior of the basket shall be uniform and may be rough turned. The smaller end of the basket shall terminate in a short parallel length and the orifice shall be provided with a radius.

8.1.2 In certain sizes, the diameter of the larger end of the interior of the basket is greater than the centre distance between the lugs. In such cases the lugs adjacent to the larger end of the interior of the basket shall be counter-tapered to obviate an abrupt change of section at this point (*see* Fig. in Table 1).

8.1.2.1 Special attention is directed to the short parallel length and orifice radius at the smaller end of the basket in both the open and closed type sockets specified. These details are of considerable importance in precluding any tendency to cut the outer wires of the rope at the junction of the rope with the socket.

8.1.3 *Open Socket*

The pin holes in the open type socket shall be drilled or otherwise machined from the solid in one operation and at one setting. The pins shall be machined from black rolled bar or forgings and drilled with a cross-hole for the split cotter pin. The axis of the pin shall be at right angles to the axis of the basket of the socket. The surfaces of the hole and pin shall be smooth and well finished.

8.1.3.1 For certain classes of work, when using open sockets as given in this standard, cases may arise where a bolt and nut may be preferable to the type of pin specified. Sockets so fitted which conform otherwise to the requirements of this standard are equally acceptable, if preferred by the purchaser.

8.2 Heat Treatment

The sockets and pins shall be normalized after the completion of all forging and machining operations.

8.3 Galvanizing

When so specified by the purchaser, the sockets and pins shall be supplied galvanized. The galvanizing shall be carried out by the hot-dip process and shall consist of a continuous coating of zinc of a purity not less than 98·5 percent according to IS 209. The tolerances specified in **5.1** and **5.2** shall apply after galvanizing.

8.4 Condition

Each socket shall be supplied free from rust and, unless specified otherwise by the purchaser, without any coating other than that provided by oiling the pin with non-drying lubricating oil.

8.4.1 Unless otherwise specified by the purchaser, each open type socket shall be supplied complete with pin and split cotter pin in place.

9 TESTS

9.1 Proof Testing

Each socket after manufacture and subsequent heat treatment shall be subjected to the proof load testing specified in Table 1 and Table 2 which it shall withstand without showing any permanent set. The proof load shall be applied in axial alignment with the basket openings. The load on the pin shall be equally distributed throughout its length between the socket jaws.

9.2 Freedom from Defect

After removal of the proof load, each socket complete with pin, shall be carefully examined by a competent person and shall be deemed to comply with the requirements of this standard only if found free from flaws or defects.

9.3 Tests for Galvanizing

When specified by the purchaser, samples of each size of socket shall be tested in accordance with IS 2633. The purchaser shall clearly state at the time of enquiry and order whether he requires the zinc coating to be tested, the number of samples ha requires to be tested, and the number of dips the sample shall be subjected to.

NOTE — It is recommended that not more than one sample of each size of socket per consignment should normally be subjected to this test.

10 Various applications of the sockets are specified in Annex A.

11 CERTIFICATE OF TEST

With each supply of sockets, the manufacturer shall furnish a certificate of test and examination in the form shown in Annex B.

11.1 When so specified in the enquiry and order, the manufacturer shall afford proof to the purchaser that the material used in the manufacture of the sockets and pins supplied conform to the requirements specified in 5 of this standard.

12 MARKING

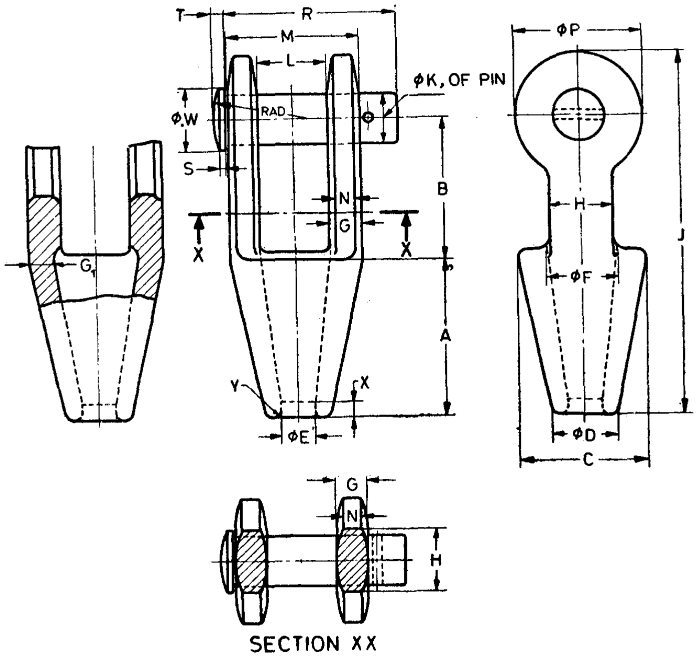
12.1 Each socket shall, after testing, be permanently and legibly stamped with such marks or symbols as will provide easy identification with the manufacturer's certificate of test.

12.2 Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

Table 1 Dimensions of Open Type Sockets

(*Clauses* 3, 4, 5, 5.1, 8.1.2 *and* 9.1)



Nominal Size mm	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*K*	*L*	*M*	*N*	*P*	*R*	*S*	*T*	*W*	*X*	*Y*	Split Cotter Pin†	Proof Load	Maximum Working Load
				Dia	Dia	Dia	*(G_1)			Dia								Dia		Rad		kN	kN
8	44	32	30	15	10	15	7	15	90	12	16	30	4	28	42	2	3	16	4	1	3.2	15	7.5
10	50	45	40	20	12	20	10	20	115	16	22	42	6	40	54	2	4	20	5	1	4	20	10
12	60	50	45	25	15	25	10	22	132	20	28	48	6	44	62	3	6	25	6	1	5	40	20
14	60	50	50	25	17	30	10	22	132	20	28	48	6	44	62	3	6	25	7	1.5	5	45	22.5
16	70	60	60	30	20	30	14	27	155	24	32	58	7	50	75	4	7	40	8	1.5	6.3	60	30

Table 1 (*Concluded*)

Nominal Size mm	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*K*	*L*	*M*	*N*	*P*	*R*	*S*	*T*	*W*	*X*	*Y*	Split Cotter Pin†	Proof Load	Maximum Working Load
				Dia	Dia	Dia	*(G_1)			Dia								Dia		Rad		kN	kN
18	75	65	70	35	22	40	14	33	172	28	38	70	8	64	85	5	8	36	10	2	6.3	85	42
20	84	70	70	39	24	45	14	38	195	32	40	70	9	66	95	5	8	36	10	2	8	98	47
22	85	75	70	40	26	45	14	40	195	32	42	78	10	70	95	5	8	40	11	2.5	8	110	55
28	115	90	100	55	32	55	18	55	278	45	51	100	12	100	125	8	13	60	13	3	10	196	98
32	130	110	110	65	40	65	24	60	292	48	54	110	16	104	135	8	13	60	16	3	10	230	115
36	150	120	130	69	44	75	24	70	352	56	72	125	18	110	145	8	13	70	18	3.5	10	314	157
40	168	130	140	77	48	85	30	80	389	64	81	139	20	116	155	8	13	75	20	3.5	10	392	196

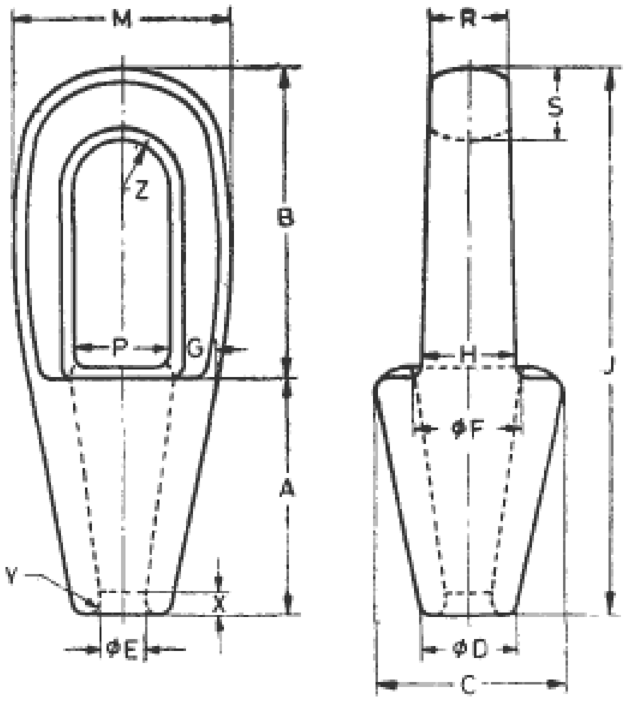
NOTE — For wire ropes of intermediate sizes, the next larger size of thimble shall he used.’

*Dimension G_1 is minimum for sizes 22 to 40 mm when counter-tapering is necessary (*see* **8.1.2**).

† Corresponding to IS 549

Table 2 Dimensions for Closed Type Sockets

(*Clauses* 3, 4, 5, 5.1 *and* 9.1)

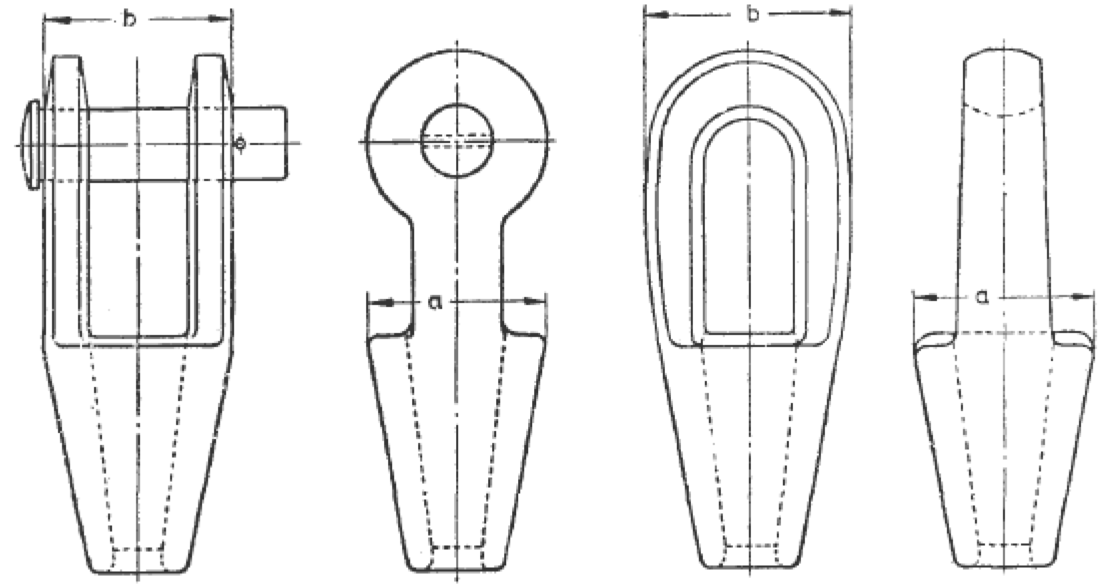


Nominal Size	A	B	C	D	E	F	G	H	J	M	P	R	S	X	Y	Z	Proof Load	Maximum Working Load
mm				Dia	Dia	Dia	min								Rad	Rad	kN	kN
8	44	15	15	15	10	15	7	15	94	35	20	10	10	4	1	10	15	7.5
10	50	65	40	20	12	20	10	20	115	45	20	15	15	5	1	10	20	10
12	60	75	45	25	15	25	10	22	135	55	24	18	18	6	1	12	40	20
14	60	75	50	25	17	30	10	22	135	55	24	18	18	7	1.5	12	45	22.5
16	70	90	60	30	20	30	14	27	160	65	30	20	20	8	1.5	15	60	30
18	75	100	70	35	22	40	14	33	175	75	40	25	24	10	2.0	20	85	42.5
22	85	115	70	40	26	45	14	40	200	85	44	30	26	11	2.5	22	110	55
32	132	150	110	65	40	65	24	60	280	125	64	40	38	16	3.0	32	230	115

NOTE — For wire ropes of intermediate sizes, the next larger size of thimble shall he used.

Table 3 Tolerances for Steel Drop Forcings and Upset Forcings

(*Clause* 5.1)



Sum *a* + *b*	**Permissible Deviation on Forged Dimensions**
Up to 30	± 0.5
Over 30 up to 50	± 0.6
Over 50 up to 80	+ 0.9 – 0.7
Over 80 up to 125	+ 1.2 – 0.8
Over 125 up to 200	+ 1.5 – 1.0
Over 200 up to 250	+ 1.8 – 1.2
Over 250 up to 315	+ 2.2 – 1.3
Over 315	+ 2.6 – 1.4

Example:

From Table 1, for nominal size 28; *a* = *C* = 100 mm

b = M = 100 mm; Hence a + *b* = 200 mm.

Therefore, tolerance on all forged dimensions = $^{+1.5}_{-1.0}$ mm

NOTE — 'a' is the largest dimension of the socket in the direction of the stroke, and *b* the largest dimension in a direction perpendicular to the line of stroke of the press.

ANNEX A

(*Clause* 10)

APPLICATIONS OF SOCKETS

The sockets specified in this standard are of normal types for general engineering purposes, they are also suitable for use in colliery haulage where they are used with a coned tail strand. It is recognized that sockets of special designs are appropriate to colliery winding, aerial ropeways, suspension bridges and guys of large radio masts. Sockets for such special purposes, therefore, are of sufficient importance to warrant individual consideration and design for the particular end in view and, for this reason, have been excluded from this standard.

ANNEX B

(*Clause* 11)

PROFORMA FOR THE CERTIFICATE OF TEST AND EXAMINATION

Distinguishing Mark (1)	**Type and Nominal Size (2)**	**Number Tested (3)**	**Date of Test (4)**	**Proof Load Applied kN (5)**

We' hereby certify that the socket(s) supplied comply in all respects with IS 2485*,* and they were subjected to the appropriate proof load(s) and subsequently examined and passed by a competent person.

Signature...

Date..

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Wire Ropes and Wire Products Sectional Committee, MED 10

Organization	*Representative(s)*
Directorate General of Mines Safety, Dhanbad	Shri D. B. Naik (***Chairman***) Shri M. Arumugami (*Alternate*)
Bharat Coking Coal Limited, Dhanbad	Shri P. K. Sinha Shri R. K. Munshi (*Alternate*)
Bharat Wire Ropes Limited, Mumbai	Shri Amol Mokhadkar
Central Institute of Mining and Fuel Reasearch, Dhanbad	Dr Manoj Kumar Singh Dr Debasish Bssak (*Alternate*)
Directorate of Quality Assurance, New Delhi	Col K. Suresh Lt Col J. A. Vora (*Alternate*)
Directorate General FAC Advice Service and Lab INSTT, Mumbai	Shri B. N. Jha Shri Amit Gola (*Alternate*)
Directorate General of Aeronautical Quality Assurance, New Delhi	Shri Santosh Ingole
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Scientist 'C' (MED), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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